Electrician Career Exploration via a Ceiling Fan Electrical Box Rough-In Activity

Edward J. Lazaros

Ball State University

ejlazaros@bsu.edu

Introduction

Electricians are involved with reading technical schematics that assist with the installation of wiring, controls, and lighting. They also inspect electrical problems and make repairs with the use of equipment and hand tools. This article includes a ceiling fan electrical box rough-in activity, which is one way to try out a real-world task that electricians often engage in. Prior to contemplating advanced study to become an electrician, participating in a hands-on activity such as this one would be one way to determine if a career as an electrician would be for you.

Responsibilities Electricians

When structures are constructed, they require the installation of electrical power, lighting, and control systems. Electricians are involved with these installations. After the structure is completed, these items must be maintained. When problems occur, an electrician is the individual who trouble shoots the problems and makes the repairs. These repairs are made by using tools and equipment such drills, screwdrivers, wire strippers, saws, ammeters, and voltmeters (U.S. Department of Labor, 2014).

Becoming an Electrician

Earning a high school diploma is a requirement. After high school, additional training can be obtained at a technical school. Graduates of a technical school can apply this experience toward an apprenticeship and receive credit for the training. Electricians typically receive training during a four to five year apprenticeship program. The apprenticeship consists of technical training as well as on-the-job training. The technical training takes place in a classroom where students learn how to read prints, learn electrical theory, math, code, and safety strategies. After the apprenticeship is completed, an electrician is classified as a journey worker and can do electrical work in accordance with licensing stipulations (U.S. Department of Labor, 2014).

Pay and Benefits for an Electrician

The U.S. Department of Labor (2014) provides wage information as of 2012 for electricians. The 2012 median annual pay is $49,840 per year. Salary.com (2014) reports the median annual salary for Electrician I as $43,825 or an hourly wage of $21.00 per hour. This source indicates that there are additional benefits that include bonuses, 401k/403B, disability insurance, healthcare insurance, pension, and time off. This can bring the total compensation from $43,825 to $64,637 annually.

Job Outlook for an Electrician

The U.S. Department of Labor (2014) reports job outlook data current as of the year 2012 regarding electricians. The number of jobs in 2012 was stated as 583,500. The job outlook from

2012-2022 has a growth rate of 20%, which is faster than average when compared to all occupations. The employment change from 2012-2022 is estimated at 114,700.

Ceiling Fan Electrical Box Rough-In Activity

This activity details the procedural steps necessary to install a ceiling fan electrical box rough-in, which is a real-world electrical task. The pictures included with the procedural steps were taken at 1332 East Jackson Street, Muncie, IN 47305 being built by Muncie Area Career Center Building Trades and Electrical Students. The home being constructed is a joint effort between the City of Muncie Community Development, Muncie Homeownership & Development Center, Muncie Community Schools, Muncie Area Career Center, and the Ball State University Design Studio. The funding was provided by a grant from Community Development. The project is handled by the Muncie Homeownership Center. In addition, the Muncie Homeowner Center assists low-income families who are first-time homebuyers with completing all of the steps that are part of the home purchasing process. The Ball State University students who are part of the Design Studio designed the project blue prints.

Equipment and Materials Required

Safety glasses
Hard had
Framing hammer
16D nails
Marker
Tape measure
Speed level
Drill
Phillips head bit
2 ½" triple coated deck screws
¾" drill bit
Ceiling fan rated electrical box
¼" nut driver bit
Roll of 12/2 electrical wire
Diagonal pliers
Electrical staples

Procedure

1. Using a tape measure, determine the distance between two of the trusses so that a board can be cut to span the distance in the horizontal position between the trusses. The board will be used for mounting a ceiling fan rated electrical box. **See Figure 1.**

Figure 1

2. Using a tape measure and marker, make a mark at 7/8" from the bottom of the truss so that the board can be mounted correctly in the vertical position between the trusses. **See Figure 2.**

Figure 2

3. Using a hammer and a 16D nail, secure the board between the trusses with a nail on one side. See **Figure 3.**

Figure 3

4. Using a speed level, confirm that the board is level between the trusses. **See Figure 4.**

Figure 4

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5. Using a hammer and a 16D nail, secure the board between the trusses on the other side. **See Figure 5.**

Figure 5

6. Using a drill with a Philips head bit and 2 ½" triple coated deck screws, install one screw on each side of each nail that was previously used to secure the board between the trusses. The screws will provide additional reinforcement. **See Figure 6 and 7.**

Figure 6

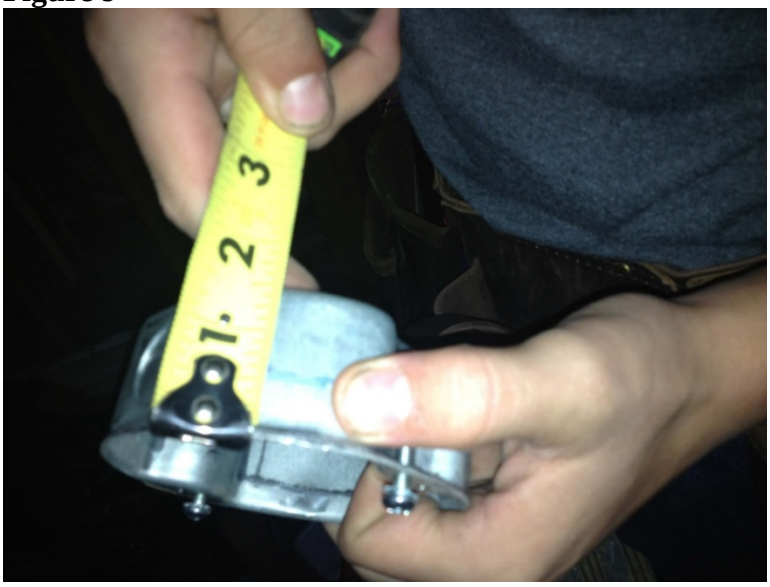
Figure 7

7. Using a drill and a ¾" drill bit, drill a hole in the center of the board to allow an electrical wire to pass through. **See Figure 8.**

Figure 8

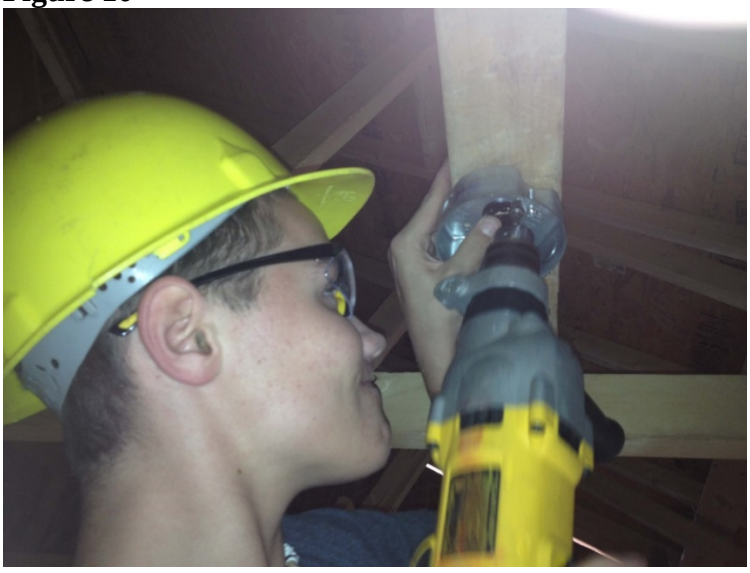
8. Because 5/8” drywall is being installed on the ceiling, the electrical box must be marked at 5/8” inch so that it will line up flush with the drywall once it is installed. **See Figure 9.**

Figure 9



9. Position the ceiling fan rated electrical box hole over the hole that was just drilled through the board. Using a drill and a ¼”, nut driver bit, install the three ¼” bolts that come with the ceiling fan rated electrical box to secure the box to the bottom of the board. **See Figure 10.**

Figure 10



10. Run 12/2 electrical wire from the switch in the room through the attic and to the ceiling fan rated electrical box. **See Figure 11.**

Figure 11

11. Using diagonal pliers, cut the 12/2 wire so that it can be passed through the ceiling fan rated electrical box. **See Figure 12.**

Figure 12

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12. Curl the 12/2 electrical wire inside the ceiling fan electrical box so that after the drywall is installed in the home the ceiling fan can be attached to the wiring with wire nuts. **See Figure 13.**

Figure 13

13. Secure the 12/2 electrical wire to the top of the rafters using electrical staples. **See Figure 14.**

Figure 14

14. This figure below features the partially completed construction project with teachers Mr. Jeremy Penrod and Mr. Dan Hubble with Muncie Area Career Center Building Trades and Electrical Students at the 1332 East Jackson Street, Muncie, IN 47305. **Figure 15.**

Figure 15

Conclusion

If inspecting electrical problems and making repairs with the use of equipment and hand tools sounds interesting, you may want to further investigate a career as an electrician. Immersing yourself in a hands-on activity such as the ceiling fan electrical box rough-in project described in this article may be a good way to determine if this career is for you. With a growth rate of 20% from 2012-2022 and a median annual salary ranging from $43,825 to $49,840 (depending on the data source), this is a career that appears to be lucrative and have a bright future.

References

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Salary.com (2014). Retrieved from: http://www.salary.com